

Comparative table of rainfall for October.
(Based upon the average stations only.)

Divisions.	Relative area.	Number of stations.	Rainfall.	
			Average.	1901.
			<i>Inches.</i>	<i>Inches.</i>
Northeastern division.....	25	21	15.12	12.99
Northern and subcentral division.....	22	52	7.81	7.92
Western-central division.....	26	22	13.42	9.09
Southern division.....	27	32	12.37	9.02
General means.....	100	127	12.18	9.76

In taking the average rainfall Mr. Hall uses only those stations for which he has several years of observation, so that the column of averages represents fairly well the normal rainfall for each division, while the column for the current month represents the average rainfall at those same stations. The relative areas of the divisions are very nearly the same and are given in the preceding table as expressed in percentages of the total area of Jamaica. The number of rainfall stations utilized in each area varies slightly from month to month, according as returns have come in promptly or not, but will not differ greatly from the numbers in the second column of the table.

Jamaica, W. I., climatological data, November. 1901.

	Neap Point Lighthouse.	Morant Point Lighthouse.
Latitude (north).....	18° 15'	17° 55'
Longitude (west).....	78° 23'	76° 10'
Elevation (feet).....	38	8
Mean barometer { 7 a. m.	29.918	29.906
{ 3 p. m.	29.864	29.860
Mean temperature { 7 a. m.	76.3	.....
{ 3 p. m.	83.1	.....
Mean of maxima.....	85.9	.....
Mean of minima.....	78.6	.....
Highest maximum.....	89.0	.....
Lowest minimum.....	64.0	.....
Mean dew-point { 7 a. m.	70.0	.....
{ 3 p. m.	71.1	.....
Mean relative humidity { 7 a. m.	81.0	.....
{ 3 p. m.	67.0	.....
Total rainfall (inches).....	0.79	11.40
Average wind direction { 7 a. m.	nne.	n. nne.
{ 3 p. m.	n. nne.	n. nne.
Average hourly velocity, miles { 7 a. m.	10.7	14.2
{ 3 p. m.	15.7	15.1
Average cloudiness (tenths):		
7 a. m. { Lower clouds.....	0.6	1.5
{ Middle clouds.....	2.3	2.2
{ Upper clouds.....	3.5	1.2
3 p. m. { Lower clouds.....	0.0	2.8
{ Middle clouds.....	5.6	1.9
{ Upper clouds.....	1.5	0.9

NOTE.—The pressures are reduced to standard temperatures and gravity, to the Kew standard, and to mean sea level. The thermometers are exposed in Stevenson screens.

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			Average.	1901.
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Northeastern division.....	25	21	10.91	23.14
Northern and subcentral division.....	22	52	5.73	8.97
Western-central division.....	26	20	6.06	4.36
Southern division.....	27	31	4.73	3.62
General means.....	100	124	6.86	10.02

CUMULUS CLOUDS FORMED BY SMOKE.

By W. H. MITCHELL, Bayonne, N. J.

During the field maneuvers and meteorological kite as-

cension of the Bayonne kite corps at their field station, November 28, 1901, a large column of smoke was observed to the northward.

It was 11:30 a. m. when the smoke was first noticed, and while the members were speculating as to the location of the fire the crest of the smoke column suddenly became capped with the white vapor of the cumulus cloud formation.

Afterward the smoke evidently rose higher than the white vapor between the observers and the new formed cloud so that for a few moments it was invisible, only to reappear later.

Finally the smoke dissipated, leaving the new formed cloud alone in the northern sky, and increasing in size. It was visible for nearly two hours before it finally disappeared from view.

The fire was slightly west of north from Bayonne and several miles distant. The minimum temperature of the day at Bergen Point was 18°, the maximum 27°. Sky absolutely clear at the time.

CLIMATOLOGY OF COSTA RICA.

Communicated by H. PITTIER, Director, Physical Geographic Institute.

TABLE 1.—Hourly observations at the Observatory, San Jose de Costa Rica, during November, 1901.

Hours.	Pressure.		Temperature.		Relative humidity.		Rainfall.		
	Observed, 1901.	Normal, 1880-1900.	Observed, 1901.	Normal, 1880-1900.	Observed, 1901.	Normal, 1880-1900.	Observed, 1901.	Normal, 1880-1900.	Duration, 1901.
	<i>660+ Mm.</i>	<i>660+ Mm.</i>	<i>° C.</i>	<i>° C.</i>	<i>%</i>	<i>%</i>	<i>Mm.</i>	<i>Mm.</i>	<i>Hrs.</i>
1 a. m.	4.38	3.10	16.64	17.05	89	92	8.8	2.0	3.66
2 a. m.	4.01	2.78	16.47	16.81	88	92	6.0	2.0	5.00
3 a. m.	3.77	2.60	16.24	16.65	88	92	8.5	1.1	4.08
4 a. m.	3.77	2.54	16.20	16.53	89	92	11.5	0.7	3.92
5 a. m.	3.98	2.80	16.15	16.44	88	92	6.9	1.1	3.00
6 a. m.	4.38	3.23	16.10	16.38	89	91	4.4	2.7	3.00
7 a. m.	4.70	3.57	17.45	17.68	82	86	3.2	0.3	3.00
8 a. m.	5.00	3.98	18.90	19.52	76	80	3.6	1.2	3.00
9 a. m.	5.16	4.18	20.37	21.49	73	75	1.0	1.8	1.42
10 a. m.	5.14	4.08	21.68	22.03	71	70	1.9	1.3	1.17
11 a. m.	4.79	3.75	22.38	22.75	70	70	2.4	2.1	1.88
12 m.	4.19	3.15	22.98	24.05	70	70	1.1	2.6	1.38
1 p. m.	3.65	2.57	22.61	23.94	70	71	2.1	7.2	1.67
2 p. m.	3.19	2.05	22.19	23.31	73	74	7.5	14.7	5.00
3 p. m.	3.02	1.85	21.39	22.36	76	77	3.9	20.0	5.41
4 p. m.	3.13	1.97	20.27	21.22	80	81	18.6	18.7	5.99
5 p. m.	3.41	2.24	19.08	20.15	80	85	22.9	19.3	4.16
6 p. m.	3.74	2.66	18.37	19.80	85	87	15.1	21.0	5.08
7 p. m.	4.26	3.19	18.06	18.65	86	89	12.4	10.8	5.06
8 p. m.	4.67	3.62	17.86	18.33	86	89	12.1	8.5	4.27
9 p. m.	5.00	3.92	17.72	18.05	86	90	2.0	5.4	2.50
10 p. m.	5.08	3.99	17.51	17.72	87	91	6.1	4.9	1.67
11 p. m.	5.04	3.86	17.32	17.42	87	91	11.6	2.5	1.94
Midnight.....	4.80	3.55	16.95	17.19	88	92	9.1	2.4	2.19
Mean.....	664.26	663.08	18.78	19.44	82	84	.....	.....	.....
Minimum.....	661.1	659.38	14.0	11.2	53	.....	.....	.....	.....
Maximum.....	666.9	667.22	29.3	29.0	100	.....	16.4	.....	.....
Total.....	.....	.....	.....	.....	.....	.....	182.7	154.2	78.65

REMARKS.—The barometer is 1,169 meters above sea level. Readings are corrected for gravity, temperature, and instrumental error. The dry and wet bulb thermometers are 1.5 meters above ground and corrected for instrumental errors. The hourly readings for pressure, wet and dry bulb thermometers, are obtained by means of Richard registering instruments, checked by direct observations every three hours from 7 a. m. to 10 p. m. The hourly rainfall is as given by Hottinger's self-register, checked once a day. Under maximum, the greatest hourly rainfall for the month is given. The standard rain gage is 1.5 meters above ground. In the Costa Rican system the San Jose local time is used, which is 0° 36' 18.3" slower than seventy-fifth meridian time.

Notes on the weather.—At San Jose the average pressure was above, and the average temperature below the normal, but the maximum temperature was the highest ever recorded for November. The relative humidity was slightly below the normal and the hours of sunshine were only about two-thirds of the normal number. Altogether November was quite abnormal as compared with the usual weather in San Jose at this